CH 390 Chemistry Research

Department of Chemistry
Washburn University

Learning Objective: Students will develop experimental procedures and laboratory skills to assimilate and apply chemical concepts to solve chemical problems.

This capstone course requires summative reflection, serving as a culminating experience for Bachelor's degree students. Significant focus will be placed on 1) searching, accessing, reading, interpreting and understanding the primary and secondary chemical literature, 2) effective oral and written communication of chemical concepts, and 3) discussion of ethics and safety.

Prerequisites: CH 291 Professionalism in Science and departmental permission.

Textbook: All of the primary and secondary chemical literature.

Attendance: For every one hour of research credit enrolled, a minimum of three hours of laboratory time is expected per week (six hours per week in the summer). There are no sick days or excused absences. All missed time must be made up. At the beginning of the semester, the student is expected to set a tentative schedule and should realize that due to the demands of the research being explored, significant deviation from the tentative schedule might need to occur.

Grading: Final grades will be assigned based on a written research proposal (20%), attendance and participation (50%), and technique and safety (30%). "Positive" results are not required to be successful in this course, whereas clear and honest results are a must. Scientific integrity and the personal safety of all the researchers involved are of paramount importance.

Research Proposal: A written research project proposal will be established and agreed upon by the instructor and student at the beginning of the semester. As the semester of active research progresses, the project may be modified due to the progress of the research. The research proposal should be written following the ACS "Guidelines for Preparing a Research Report" (https://www.acs.org/content/dam/acsorg/about/governance/committees/training/acsapproved/degreeprogram/preparing-a-research-report.pdf) and the *ACS Style Guide*, by J. S. Dodd.

Research Report: A written report on your research is expected in CH 491 Chemistry Seminar.

Safety Training: All research students are required to complete the laboratory safety training in CH 291 Professionalism in Science before starting any research work.

Lab Notebook:

- It should be treated as a legal document. Use only permanent, black ink. All errors should be crossed out with a single line, date and initial. Do not worry as mistakes happen to all of us.
- All procedures must indicate necessary safety precautions.
- Document EVERYTHING.
- Be very clear and organized.

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